

Amendments to the Drawings

Figure 6 has been amended to include the reference number “101” and Figure 14 has been amended to change the reference number “103” to “103”.”

Attachment: Replacement Sheet
Annotated Marked-Up Drawings

REMARKS

In response to the Office Action mailed July 31, 2006, Applicants respectfully request reconsideration. Claims 1-84 were previously pending in this application. By this amendment, Applicants are canceling claims 9, 10, 12-25, 28, 37, 38, 40-53, 58-64, 67, 82-84 without prejudice or disclaimer. Claims 1, 29, 32, 56, and 57 have been amended. New claims 85-118 have been added. No new subject matter has been added. As a result, claims 1-8, 11, 26, 27, 29-36, 39, 54-57, 65, 66, 68-81, and 85-118 are pending for examination with claims 1, 29, 56, 57, 85, 87, 92, 98, 101, 103, 108, and 114 being independent. The application is believed to be in condition for allowance.

Allowable Subject Matter

Applicants note with appreciation the indication of allowable subject matter in claims 9, 10, 12-25, 37, 38, 40-53, 65, 66, 68-81. New Claims 85 and 86 contain the subject matter of allowed Claims 9 and 10, respectively. New Claims 87-100 contain the subject matter of allowed Claims 12-25, respectively. New Claims 101 and 102 contain the subject matter of allowed Claims 37 and 38, respectively. New Claims 103-116 contain the subject matter of allowed Claims 40-53, respectively. Therefore, New Claims 85-116 should be allowable.

Objections to the Drawings

The Office Action objects to Figures 6 and 14 for not featuring reference labels that have been mentioned in the specification. Specifically, the reference label "101" has been mentioned in the specification in relation to Figure 6 and the reference label "103" in relation to Figure 14. Figures 6 and 14 have been amended to include the reference labels "101" and "103," respectively.

Objections to the Specification

The Office Action objects to the specification for comprising various informalities. The specification has been amended as suggested by the Office Action.

Claim Objections

The Office Action objects to Claim 32 for comprising an incorrect reference. Claim 32 has been amended as suggested by the Office Action.

Summary of Embodiments Of Applicants' Invention

An example of one embodiment of Applicants' invention is described below to highlight some aspects of the invention. This embodiment is described primarily in Applicants' specification at page 9, lines 4-9; page 10, lines 22-26; page 11, lines 8 and 9; and Figure 5. It should be appreciated that the description below is merely an example of one of many embodiments that fall within the scope of Applicants' claims and is provided merely for the purpose of highlighting some aspects of Applicants' invention.

Figure 5 provides an illustrative overview of the communication device. A device 3 transmits electromagnetic signals 1 and receives electromagnetic signals 2 via a single aperture structure 4. The aperture structure 4 allows transmission and receiving of electromagnetic waves 5, 6 from and to multiple directions and with multiple wavelengths λ . The directions of electromagnetic waves 5, 6 can be changed using steerable deflectors within the device 3 (page 9, lines 4-9). The deflectors may be wavelength dependent (page 11, lines 8-9). The deflectors may also be individually movable to allow steering of signals in different directions outside the device or fixed for a set of predetermined directions of communications (page 10, lines 22-24). Or in other words, the steering direction of the signals may be changed dynamically or may be static and preset. The movement of the deflectors may be achieved by placing each deflector, allowing for *the steering of individual wavelengths*, in an electronic motor-controlled mount that can steer the deflected beam (page 10, lines 24-26).

Rejections Under 35 U.S.C. §102 and 35 U.S.C. §103

The Office Action rejects Claims 28, 56, and 84 under 35 U.S.C. §102 as being anticipated by Farr, U.S. Patent No. 6,940,593 (Farr). Claims 28, and 84 have now been canceled.

The Office Action also rejects Claims 1, 2, 4-6, 8, 11, 27, 29, 30, 32-34, 36, 39, 55, 57, 58, 60-62, 64, 67, and 83 under 35 U.S.C. §103(a) as being unpatentable over Farr in view of

Rice, U.S. Patent No. 5,347,387 (Rice). The Office Action further rejects Claims 3, 7, 26, 31, 35, 54, 59, 63, and 82 under 35 U.S.C. §103(a) as being unpatentable over Farr in view of Rice and further in view of Sakanaka, U.S. Patent No. 6,335,811 (Sakanaka). Applicants respectfully traverse these rejections.

Discussion of the Cited References:

Rice illustrates a compact self-aligning transceiver for high bandwidth communications. In Figure 1 (relied upon by the Office Action) Rice depicts a transceiver adapted for communications with a single receiver. The system described by Rice is mounted on a hermetic transparent sphere that enables *a system of optical components* to be rotated for receiving and transmitting radiation beams (abstract).

Farr illustrates an optical reflection device for filtering and spatially positioning individual optical channels or wavelengths (abstract). In Figure 1 (relied upon by the Office Action) Farr depicts an optical reflection device, or wedge stack 75, which is an optical element that reflects and spatially positions a set of wavelengths to detector array 85 (col. 4, line 66 – Col. 5, line 3). As may be seen in Figure 5, the wedge stack comprises multiple wedges which are stationary in relation to one another. Therefore, with respect to the individual wedges, the angles at which an incident beam is reflected will remain unchanged. Thus, Farr teaches a *static* steering, or deflection, of wavelength signals. In the communications application described at column 1, lines 47-59, the wedge stack would be used as a wavelength demultiplexer of signals received from a single optical channel.

There is no Motivation to Combine Rice and Farr:

The Office Action asserts that Rice teaches an aperture structure and a deflector deflecting respective electromagnetic signals passing through the aperture structure. The Office Action concedes that Rice does not teach a stack of deflectors deflecting respective electromagnetic signals of respective wavelengths at respective angles but asserts that Farr discloses such a stack of deflectors. The Office Action further asserts that it would have been obvious to one of skill in the art to apply the deflectors taught by Farr to the device of Rice so

that a multi-wavelength system can be implemented and system capacity can be substantially increased. Applicants respectfully disagree.

Farr discloses a communications application in which multiple wavelengths transmitted over an optical filter are separated out for detection *within a receiver*. There is no suggestion of directing the signals at different angles through an aperture to remote receivers or of receiving signals from multiple locations.

Rice is only intended to receive and transmit from and to, respectively, *only one source at a time*. Modifying the device of Rice in order to implement a multi-angle system would change the device's principle of operation. Furthermore, the proposed modification would also require a complete redesign as complex optics, apart from the deflection stack of Farr, would be required to the functionality of multiple channels at multiple angles in the device of Rice. Such a modification would not be in accordance with the MPEP §2143.02(VI).

The Claims Distinguish the Cited Prior Art taken Individually or in Any Combination:

Even if one of skill in the art were to combine Rice and Farr in the manner suggested by the Office Action (which Applicants do not concede), the Claims as amended would still distinguish any such combination.

Amended Claim 1 requires "...*wavelength dependent* deflectors deflecting respective electromagnetic signals of *respective wavelengths at different respective wavelength dependent angles* to *dynamically and independently steer* the electromagnetic signals passing through the aperture structure." Neither Rice nor Farr teach or suggest *wavelength dependent* deflectors deflecting respective electromagnetic signals of *respective wavelengths at different respective wavelength dependent angles* to *dynamically and independently steer* the electromagnetic signals passing through the aperture *to and from remote devices*. Farr instead teaches deflecting electromagnetic signals of respective wavelengths with the use of a *static* steering. Furthermore, the deflected signals of Farr are not independently steered as the individual wedges of the wedge stack are not capable of individual control. In addition, Farr does not teach or suggest passing the deflected signals to and from remote devices, but instead teaches passing the signals to a detection array.

Therefore, at best, a combination of Rice and Farr would comprise an optical system including the wedge stack of Farr, wherein the *entire system* as a whole may be dynamically steered via a hermetic transparent sphere. Thus, instead of *dynamically and independently steering* the respective electromagnetic signals of respective wavelengths at different respective wavelength dependent angles, the respective electromagnetic signals would be steered together in the same manner as the entire communication system. The combination of Rice and Farr would result in a transceiver transmitting and receiving signals with respect to *only one* transmitter or receiver at a time, as is taught by Rice. The receiver in the transceiver might include the wedge stack of Farr to demultiplex received signals from a single remote transmitter. Thus, amended Claim 1 (from which Claims 1-8, 11, 26, 27, and 117 depend from) patentably distinguishes the prior art of record.

As should be appreciated from the above discussion relating to Claim 1, amended Claim 29 (from which Claims 30-36, 39, 54, 55, and 118 depend from), and amended Claim 57 are patentably distinct from the prior art of record for at least the same reasons.

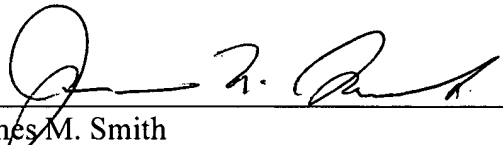
With respect to amended Claim 56, as should be appreciated by the above discussion relating to Farr, the prior art of record fails to teach or suggest "...*independently* deflecting electromagnetic waves within a first wavelength band at a *dynamic* angle..." Farr instead teaches deflection through a *static* angle. Thus, amended Claim 56 is patentably distinct from the prior art of record.

CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

HAMILTON, BROOK, SMITH & REYNOLDS,
P.C.

By 
James M. Smith
Registration No. 28,043
Telephone: (978) 341-0036
Facsimile: (978) 341-0136

Concord, MA 01742-9133

Dated: 

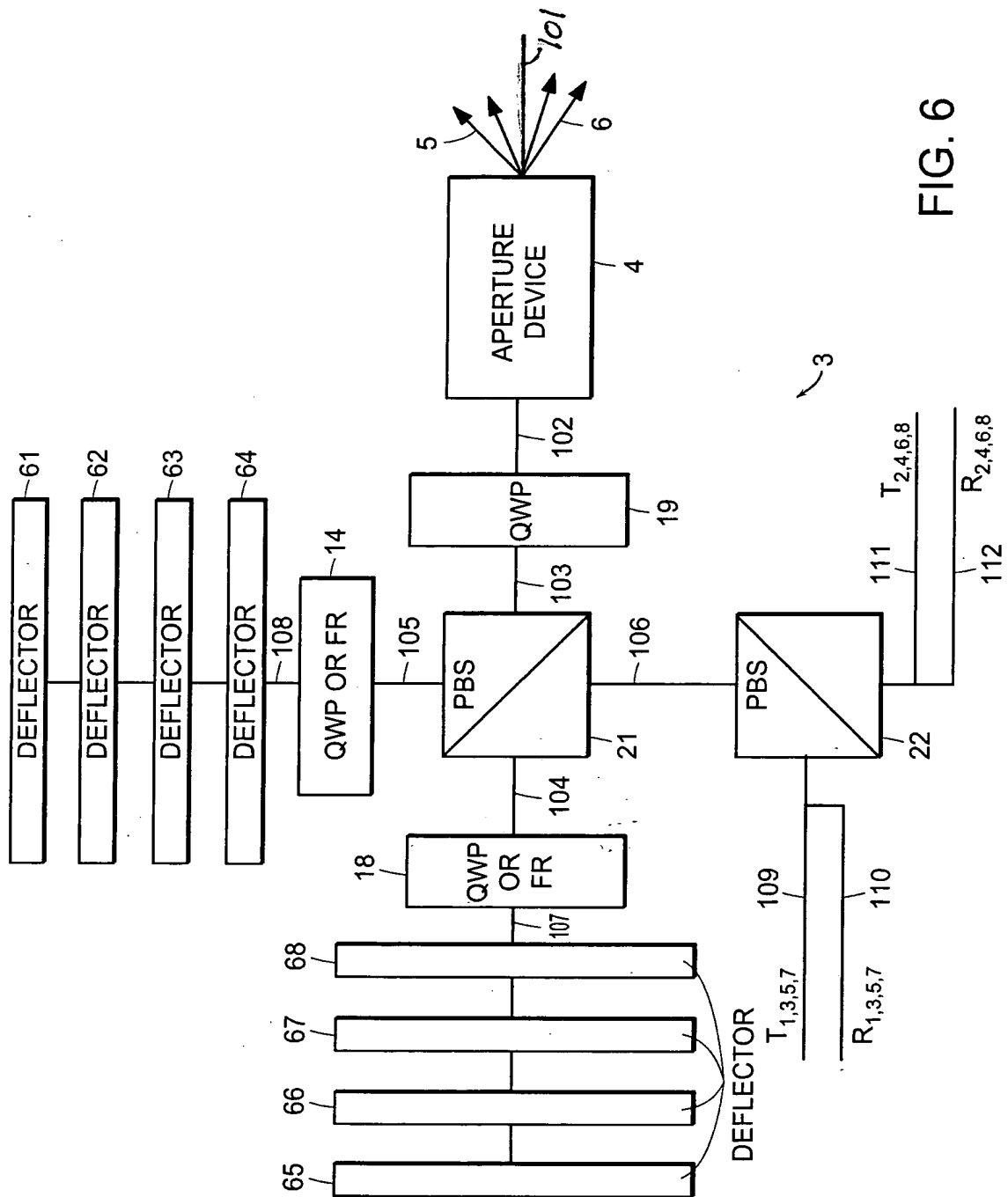


FIG. 6



14/14

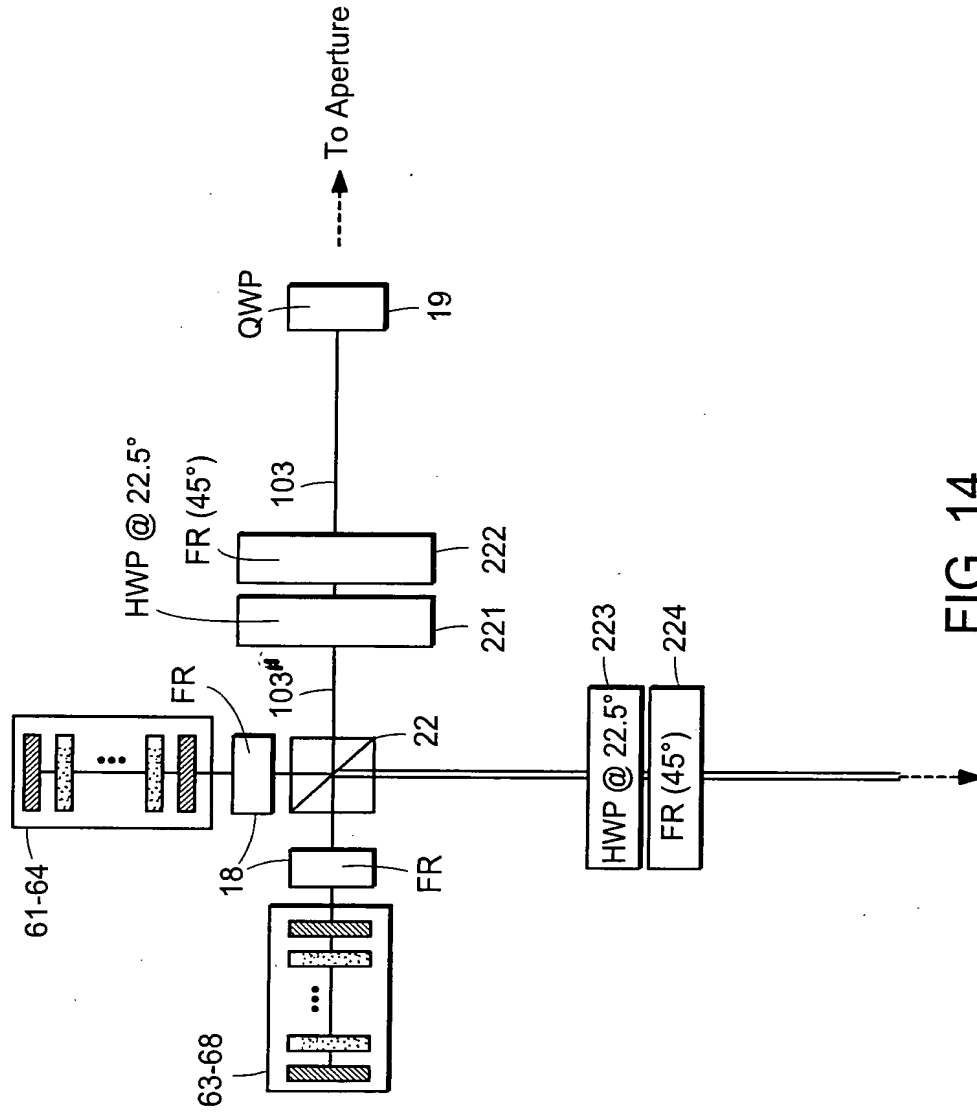


FIG. 14